



# Lake Steward

The newsletter of King County Lake Stewardship program Vol. 9, No. 1 Winter 2002

## Cool, wet weather is just ducky for our webfooted friends Spotting Winter Waterfowl

Cold winter mornings often bring a variety of birds to your lake's chilly water. This is a busy time of year for these creatures as they look for food, squabble over mates, and establish territory and position. The resident regulars, such as coots, mallards, and Canada geese, are easily spotted, but if you look carefully, you may also pick out lesser known waterfowl. Some of them are here for their winter break before returning north to breed, while others will stay in the north-west, either moving to a different

habitat for summer or remaining nearby to raise their young.

### Black and White is Beautiful

There are many male water birds with striking black-and-white plumage. In comparison, their female companions are usually a dull or dusky brown. Small groups of male **common mergansers** can often be seen in on small lakes. Their bright black heads make a stark contrast to their long, sleek white bodies. They dive for small fish, as well as insects and

small crustaceans. The females can be identified by their soft brown plumage, with rusty brown heads that feature a ruffled crest of feathers sticking out of the back.

Another more solitary species is the little **bufflehead**. The male is characterized by the large white (continued on page 3)



Bufflehead ducks



Common merganser

## Three cheers for Lake Stewards!

# Volunteers Make a Difference

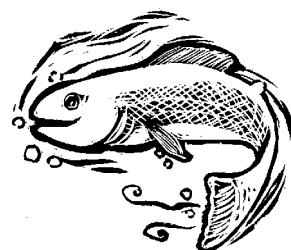
Since 1985 residents have monitored water quality on over 50 King County lakes. Through the effort of these dedicated volunteers, a long-term record tracking the health of small lakes has been created, helping scientists, policy makers, landowners, developers, and others to make informed decisions regarding lake management.

Monitors watch their lakes closely, recording data such as water temperature and lake levels. (For details on the tasks volunteers perform, see the accompanying article on page 2.)

Last year, volunteers logged an estimated total of

1600 hours collecting data on their lakes, serving as an indispensable link in the chain of knowledge. Without this network of tireless volunteers, it would have been impossible for the County to acquire the volume of lake information it has over the past 16 years.

King County's Lake Stewardship program (the publishers of this (continued on page 6)



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**KING COUNTY**

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## Lake monitors report **Measuring Up**

They toil hundreds of hours throughout the year, in all kinds of weather, monitoring water quality. This article, the first in a two-part series, examines how volunteer lake monitors collect data and its importance in King County's ongoing effort to track the health of watersheds and individual lakes.

### **Precipitation**

Volunteers measure accumulated rainfall on a daily basis using a rain gauge. After recording the amount of water in the gauge, it is emptied, and left to catch the next day's precipitation. Precipitation data helps staff to understand rain-

than two meters. Generally highest in late winter and lowest in late summer, lake levels can also rise in response to rain events, and lower during dry spells. The extent to which lake levels change in response to rainfall is often a good indicator of the nature of the watershed and/or the way the lake is fed. Urban lakes with high percentages of impermeable surfaces and lakes fed by surface water usually exhibit greater immediate increases in lake level during a rainstorm than lakes fed by groundwater (springs) or in watersheds with less development. The primary concern for accurate

measurement techniques is proper installation of the measuring gauge. Sudden changes (up or down) can indicate a problem with an outlet structure, increased beaver activity, or other natural or managed

changes in the local hydrology.

### **Temperature**

Measured on a weekly basis, water temperature has a substantial effect on biological activity. Warmer temperatures promote increased growth of algae and other plants. Many lakes develop two layers of temperature during summer months, with warmer water near the surface and cooler layer be-

low. Taking temperatures at multiple depths can determine if a lake has "stratified." This layering plays an important role in the nutrient concentrations in lakes. Also, daily variations in air temperatures can affect water temperature near the surface, so reading temperature at roughly the same time each day is important.



### **Secchi Depths**

The Secchi disk, a metal disk with a black and white pattern, is a simple tool used to measure water clarity. Volunteers lower the disk into the water until it is no longer visible. The depth at which the disk drops out of view is called the Secchi depth. This simple measurement can be a quick indicator of overall water quality of a lake. Larger Secchi depths (clearer water) often indicate less biologically productive lakes. Consistency in measurement methods is the key to measuring the Secchi depth, as slight changes in methods can yield far different results.

Next time we will review the monitoring techniques and parameters used to measure water samples collect by volunteers during spring, summer, and autumn. 🐸



fall patterns in western King County and measure how particular storms affect some lakes more than others.

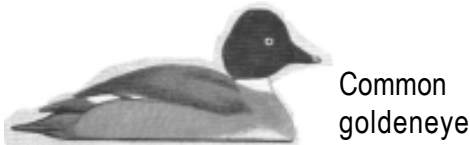
### **Lake Level**

Lake levels, measured daily using a meter stick mounted on a fixed dock or post, are of obvious importance to lakeside residents. Although levels do not often fluctuate quickly, many lakes exhibit annual fluctuations of more

# Winter Waterfowl. . .

patch on the upper back of the relatively large head and a black stripe down its back. They swim jauntily and dive frequently, popping up again with a quickness that makes them look cheerful. The females are brown, with a small white spot on the side of the head that echoes the male's large white patch.

A third category of black-and-white ducks includes the **common goldeneye**, which can be seen on



Common goldeneye

small lakes in winter, both alone

and in very small groups. The males have a round white patch between their eye and beak that contrasts clearly with their glossy black heads; the body has very white



sides and a black stripe up the back. The females are feathered in various shades of brown. Goldeneyes behave a little like buffleheads, but they are larger and their movements are less perky and more graceful.

## A Few Others

The **pied-billed grebe** is a fun

species to watch. It lives near the shoreline and is the smallest grebe inhabiting our area. Unlike ducks, males and female pied-billed grebes have essentially the same body plumage. The birds are usually seen alone, swimming just off the shoreline, sinking quickly without making ripples and surfacing just as easily. Sometimes they will only show their heads before disappearing again.

The **western grebe** is another



Pied-billed grebe

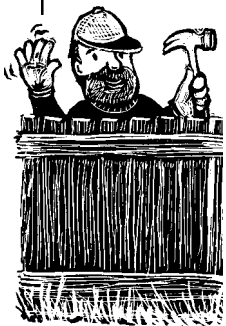
black-and-white bird, but can easily be recognized from ducks by its long neck. Males and females both have the same pattern of plumage, dark over all with a bright white neck front and chin. Rafts of western grebes can be found floating over deeper water in the winter,

resting together or calling to one another with soft, chirping cries. When

they pair off in the spring, you can sometimes see couples doing spectacular dances together. They are known to nest in our area, and a heart-warming sight is to view a mother grebe carrying her babies on her back in mid-spring.



Western grebe



## Ask Dr. Lakenstein

*Any suggestions for a "lake-friendly" product I can put on my newly installed dock to preserve the wood?*

—Concerned Homeowner

Sadly, most wood treatments are not lake friendly. In order to keep algae, mold, mildew, and fungi from eating away at the wood, toxic chemicals are commonly put into the paints, stains, varnishes or

other compounds. When these products are applied to docks already in the water, small drips and leaks typically fall into the lake, even when using the utmost care.

However, there is a new product on the market, called "Natural Deck Oil" that is formulated without any additional toxic chemicals. It is made of oils which substitute for the original wood oils that are lost over time with exposure, and it

(continued on page 6)

There are many more winter water birds, each with interesting habits and quirks of behavior that can make them a joy to observe. For an introduction into their world, a good place to start is with your local Audubon Society. Check with them for further instructions on how to identify a variety of birds and the best places for viewing. The Seattle Audubon Society maintains a website at <http://www.seattleaudubon.org/> and the Rainier chapter (south King County) at <http://www.rainieraudubon.org/birdwatch/index.html>. 🐾

## King County at work

# County Flood Center is a National Leader

Luckily, most people living near lakes in King County rarely have to contend with flooding issues. But when the unlikely happens, County residents can take comfort in knowing there is a highly trained emergency response team in place ready to assist in a time of crisis. Even when the sun is shining, the County is hard at work on its floodplain management programs.

### An Outstanding Job

In October, 2001, King County was recognized by the Federal Emergency Management Agency (FEMA) for outstanding floodplain management programs, a tremendous honor. King County's floodplain management rating was upgraded from a Class 6 to a Class 4 by FEMA, making King County the highest rated flood prevention county in the United States. The upgrade translates into a 30 percent reduction in King County residents' flood insurance costs.

Howard Leiken, FEMA's Deputy Administrator for Insurance, commented, "King County has done an outstanding job of developing and implementing a comprehensive floodplain management program that is recognized as a national leader."

King County's Departments of Development and Environmental Services (DDes) and Natural Resources and Parks work to reduce the hazards and impacts to King County citizens living in flood-

A past flood on the Cedar River. Today, thanks in part to King County's outstanding floodplain management, the number of severe flooding events has been reduced.



prone areas by providing such services as:

- Performing floodplain mapping studies and developing a Comprehensive Flood Hazard Reduction Plan;
- Acquiring and relocating structures;
- Operating the Flood Warning Center;
- Maintaining and repairing an inventory over 500 flood protection levees and revetments to improve structural performance and enhance fisheries benefits;
- Enforcing construction and development regulations.

### The Flood Warning Center

A cornerstone of the floodplain management services is the Flood Warning Center (FWC). When flood conditions are imminent, the FWC springs into action and alerts other public agencies, citizens, and businesses on the status of river flows and dam operations. Monitoring staff, who work 12-hour shifts from either midnight to noon or noon to midnight, analyze flood

warning information and work closely with the King County Emergency Operations Center during major events.

In conjunction to the activities at the FWC, King County also has Flood Patrol units in the field. The two-person patrols inspect flood control facilities for damage, locate and report flood problems and emergency conditions, and investigate citizen and landowner complaints.

### Flood Insurance


Aside from prevention measures and early warnings, citizens may also want to consider obtaining flood insurance, especially those living on lakes that historically have had flooding events. Anyone can purchase flood insurance; property does not have to be located in a designated flood hazard area to be insured. For more information, call **1-888-FLOOD29**.

For more information about the County's floodplain management programs, including updated information on current flooding conditions, log onto <http://dnr.metrokc.gov/topics/flooding/FLDtopic.htm>.

# Lake-friendly Aquatic Plants

All animals, including the two-legged variety, depend on plants for food, shelter, and oxygen. It is easy to think of plants that we use every day, from the vegetables on our plate to the trees used to build our homes. Similar to their landlocked brethren, lake plants also provide vital habitat and food for many critters. What follows is just a handful of the many beneficial aquatic plants native to the fresh waters of the Pacific Northwest.

## Yellow Water Lily



*Nuphar lutea* is a water lily typically found growing in shallow lake areas. But unlike the more invasive, non-native white water lilies, this variety is beneficial. The large leaves (10-40 cm long), characteristically heart-shaped, provide habitat for algae, insects, and other aquatic organisms. These floating leafed plants bear big (10 cm) yellow blooms that can be found from June to mid-August poking up from the water's surface. Waterfowl eat the seeds while deer, muskrat, and beavers consume other plant parts.


## Hardhack

*Spiraea douglasii*, commonly called hardhack, is a shoreline shrub that can reach heights

between 1-2 meters and may become very dense. The leaves are oval, 3-10 cm long, with distinct sawtooth leaf edges. The flowers are showy pink plumes at the end of each branch.

Hardhack plants are sometimes confused with the more invasive, troublesome purple loosestrife because of similar flower shape. Purple loosestrife is an invasive weed, and listed on King County's 2002 Noxious Weed list. Hardhack, on the other hand, is native to the Pacific Northwest and provides some beneficial habitat. But it should be noted that hardhack can become a nuisance plant as it tolerates flooding and readily invades wetland areas if soils are disturbed.

## Hard Stem Bulrush




*Scirpus acutus* is a relatively leafless plant found along the lake shoreline from June to September. Commonly known as bulrush, it is characterized



by tall (1-3 meters) green stems that are distinctly cylindrical in shape, tapering at the tip. The flowers emerge at the stem tip as clusters of individual spikelets. Bulrushes provide food and shelter for a variety of animals including fish, otters, deer, beaver, muskrat, waterfowl, and shore birds. Native Americans traditionally used bulrushes to make mats and baskets. These items and others made from bulrushes served as important trade items.

## Cattails



*Typha latifolia* have long, flat tapering leaves along with a dense brown spike of flowers at the top of a tall stalk. Total height can reach 1-3 meters. Cattails are typically found together with bulrushes along the shoreline. Many species of waterfowl and mammals depend on these plants for food and shelter. The underground stems provide food for geese, beaver, muskrat, and other animals while marsh wrens and redwing blackbirds nest among the upper stems.

Indigenous people used both cattail leaves and bulrush stems to make mats that were hung as screens, used as shelter, or served as mattresses and kneeling pads. Baskets and string were also fashioned from cattail leaves.

# Lakenstein. . .

(continued from page 3)

works by sealing the wood in such a way that water can't get in, thus keeping wood attackers out. Odorless and non-toxic, Natural Deck Oil can even be applied when the wood is damp. Still, it is best to use the product with care, avoiding drips into the water and using a drop cloth wherever possible. For more information on this product, log on to <http://www.biowash.com>.

Want to know more about green building materials? Check out The Environmental Home Center website at <http://www.built-e.com/>. Lakeside property owners may also want to consult the Washington Toxics Coalition (206) 632-1545 for additional product information. You can also visit them online at <http://watoxics.org/>. 🐸

# Volunteers. . .

(continued from page 1)

newsletter) coordinates volunteer monitoring duties into two participation levels. **Level I** volunteers collect physical data on a daily and/or weekly basis. Their duties include recording:

- lake level (daily or weekly)
- precipitation (daily or weekly)
- Secchi depth (clarity measurement, weekly)
- water temperature (weekly)



**Level II** volunteers collect physical and chemical data twice a month, May through October, including Secchi depth and surface water temperature.



Water samples collected by volunteers are analyzed by the King County Environmental Lab to track:

- total phosphorus
- total nitrogen
- chlorophyll *a*
- algae

Volunteers are still needed. If you own a boat and enjoy going out on the water, you could help us in our on-going monitoring efforts. If interested, please contact **Michael Murphy** at (206) 296-8008. 🐸



**KING COUNTY**

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## Lake Steward Winter 2002

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